Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A method of classifying media comprising:

generating a probabilistic input-output system having at least two input parameters and having an output which has a joint dependency on said input parameters, said input parameters being associated with image-related measurements acquired from imaging textural features which are characteristic of different classes of media, said output being an identification of a media class;

imaging a medium of interest to acquire image information regarding textural features of said medium of interest, said textural features being related to structure of said medium of interest;

determining said image-related measurements from said image information; and

employing said probabilistic input-output system to associate said medium of interest with a selected said media class, including using said image-related measurements determined from said image information as said input parameters; wherein generating said probabilistic input-output system includes:

imaging a plurality of samples of each of said media classes;

calculating said image-related measurements for each of said samples that are imaged;

on a basis of said input parameters that are associated with said image-related measurements, mapping each said sample in a multi-dimensional data distribution to form a cluster-weighted model (CWM) in which joint probability densities established by said mapping are used to define probability clusters within said data distribution; and

associating said probability clusters with said media classes.

2. (original) The method of claim 1 wherein generating said probabilistic input-output system includes relating texture-dependent vectors (x) to media-identification outputs (y), said input parameters being parameters of said texture-dependent vectors.

3. (original) The method of claim 2 wherein generating said probabilistic input-output system includes using mean values (μ) of the reflectivities of said medium classes and standard deviations (σ) of said reflectivities as said input parameters.

4. (previously presented) The method of claim 1 further comprising setting print parameters for applying print material on said medium of interest, including basing settings of said print parameters on said output of said probabilistic input-output system.

5. (cancelled)

6. (currently amended) The method of claim 1 ~~claim 5~~ wherein said associating said probability clusters includes forming a look-up table which correlates said probability clusters with said media classes, said media classes including at least one type of paper.

7. (previously presented) The method of claim 1 wherein said imaging includes projecting light onto said medium of interest at an angle of less than 45 degrees relative to an imaged surface of said medium of interest.

8. (previously presented) The method of claim 7 wherein said imaging further includes detecting surface features having dimensions of 100 μm or less.

9. (previously presented) The method of claim 1 wherein said imaging includes projecting light onto said medium of interest at an angle greater than 45 degrees relative to an imaged surface of said medium of interest, said image-related measurements being specular measurements.

10. (withdrawn) A system for classifying media comprising:

memory having storage of cluster-weighted modeling (CWM) data indicative of correlations between reference texture-dependent vectors (x) and media identifications (y), said texture-dependent vectors being indicative of characteristic surface textures for various media;

a media storage and dispensing system configured to store and to manipulate said various media;

an imager positioned with respect to said media storage and dispensing system to capture image information of media stored and manipulated thereby;

a processor configured to manipulate said image information to derive texture-dependent vectors specific to said media; and

a print selection controller cooperative with said processor and said memory to select particular print parameters on a basis of correlations between said derived texture-dependent vectors and said reference texture-dependent vectors, said particular print parameters being specific to recording marks on said media.

11. (withdrawn) The system of claim 10 wherein said imager is disposed to image said media within a tray of said media storage and dispensing system.

12. (withdrawn) The system of claim 10 wherein said imager has a resolution sufficient to detect surface features that are characteristics of said media.

13. (withdrawn) The system of claim 10 wherein said processor is configured to determine mean values and standard deviation values from said image information.

14. (withdrawn) The system of claim 10 further comprising a printing system for recording said marks on said media in response to said print selection controller.

15. (withdrawn) A print system comprising:

a media tray for retaining recording media at a start of a feed path;

a media feed mechanism that defines said feed path for travel of any one of a plurality of recording media types;

a print device to record marks on said recording media traveling along said feed path;

a print controller connected to said print device to select particular print parameters based on said recording media types; and

a media classifier enabled to distinguish said recording media types, said media classifier including an imager disposed relative to said media tray and said media feed mechanism to capture image information and including at least one illumination source having an incidence angle of less than 46 degrees relative to a surface of a recording medium from which said image information is captured, said media classifier having an output connected to said print controller.

16. (withdrawn) The print system of claim 15 wherein said media classifier includes a plurality of said illumination sources having different wavelength centers.

17. (withdrawn) The print system of claim 16 wherein said media classifier includes a sequencer to sequentially activate said illumination sources, said illumination sources having differing incidence angles onto said recording medium.

18. (withdrawn) The print system of claim 15 wherein said media classifier includes a processor configured to derive texture-dependent vectors from said image information and to associate said texture-dependent vectors with probabilities of recording media types from which said image information is captured.

19. (withdrawn) The print system of claim 18 wherein said media classifier includes memory having storage of cluster-weighted modeling which correlates said texture-dependent vectors to said probabilities of recording media types.

20. (withdrawn) The print system of claim 15 wherein said imager includes an array of photosensitive elements.

21. (currently amended) A method of performing media classification with respect to a plurality of different media classes, the method comprising:

acquiring statistics about surface textural features that are inherent to the different media classes; and

generating a probabilistic input-output system having at least two input parameters and having an output which has a joint probability density dependency on said input parameters, said input parameters being associated ~~with the~~ with said statistics, said output being an identification of a media class, including utilizing cluster-weighted modeling in implementing said probabilistic input-output system so as to define clusters which are subsets of data space according to domains of influence.

22. (currently amended) A method of classifying a medium of interest with respect to a plurality of different media classes, the medium having surface textural features that are inherent to the medium, the method comprising:

acquiring image information about the surface textural features inherent to said medium;

generating statistics about the surface textural features from the acquired information; and

using a ~~probabilistic~~ cluster-weighted input-output model to discriminate the medium against the media classes on a basis of matching said statistics to clusters which are subsets of data space according to domains of influence, including ~~using the~~ using said statistics as input parameters to the model, said discrimination of said medium having a joint probability density dependency on said statistics.

1 23. (previously presented) A system for performing the method of claim 22.

1 24. (previously presented) A printer for performing the method of claim 22.